the CPE. Accordingly, during a time period T4, the CPE processes the response or acknowledgement signal. If the proper response is received, then during a time period T5, the warm start process may initiate. This is but one possible time sequence for a warm start signal operation. The durations of each time period are provided for purposes of example only and not intended to reflect the actual time frames of the wake-up signal and/or optional response signal during time period T3.

Figure 11 illustrates a state diagram for an example sequence of wake-up for a communication system. This is but one example pattern of states which the wake-up system may assume. At a state 1102 the communication devices initiate a power-down process after a period of inactivity. From state 1002 the system may progress to a state 1106 and monitor for a sequence signal that indicates a desire for one or more of the communication systems to wake-up. At state 1106, the monitoring may continue, or the operation may progress to a state 1108 to receive an incoming signal. Any type signal may be received. In one embodiment only a sequence signal having predetermine characteristics will trigger a system activation via a warm start. After receiving the signal at state 1108, the system moves to state 1112 wherein the received signal is correlated. After state 1112 the system moves to a state of operation comprising signal analysis at a state 1126. In one embodiment the signal analysis comprises comparison of the correlated signal to a known signal having known characteristics. Based on this comparison, a determination can be made whether the received signal was a request for a

warm start procedure. Any of one or more communication devices may initiate the processes by transmitting a wake-up signal.

From state 1126 the system may assume state 1130 or return to state 1106 to continue monitoring for a signal. State 1106 occurs if the signal, after analysis, does not qualify as a signal requesting warm start. State 1130 comprises a channel analysis state wherein the change in the channel may be determined based on comparison of current channel parameters to prior channel parameters. Current channel parameters may be determined via the analysis during state 1126. From state 1130, the operation may assume a state 1134 or a state 1138. At state 1134, a warm start operation is initiated. This state is reached if the analysis at state 1126 reveals that the received signal was a wake-up signal and the channel comparison at state 1130 determines that the channel parameters had not changed so significantly so that a warm start procedure could not be performed.

Alternatively, state 1138 may be initiated such that a cold start process occurs. If the channel parameters change significantly, then a warm start process may not be able to occur. Thus a cold start process is initiated. After either of the warm start process of state 1134 or the cold start process of state 1138, the system progresses to a state 1142 where active communication occurs between two or more communication devices. If during active communication a sufficient period of inactivity occurs, then the system may initiate a power down state, to save power and reduce noise and heat generation, by returning to a state 1102.

Figure 12 illustrates an example method of sequence generation. To aid in understanding, Figure 12 is divided between a transmitter side on the left and a receiver side on the right. As can be understood, steps are simultaneously being undertaken at both the receiver and the transmitter. Numerous different methods of sequence generation are possible. The embodiment shown in Figure 12 comprises generation by use of a linear feedback shift register (LFSR). At a step 1202, the wake-up operation initiates the signal generation process. Next, at step 1206, a specific sequence is designated for use. One characteristic of a specified sequence is its period. At step 1210, the operation preloads registers of the linear feedback shift register with values necessary to realize the specified sequence. At a step 1214, the operation begins inputting a constant sequence of logical 1's into the sequence generator. Thereafter, at a step 1218, the operation processes the series of logical 1's through the sequence generator to create the specified sequence signal.

Figure 13 illustrates an alternative method of sequence generation such as might be implemented for use with a table look-up method. At a step 1302, the sequence signal generation process is initiated. Thereafter at a step 1306, the operation specifies a sequence for generation. Once the desired sequence is specified at a step 1310, the system obtains or is provided a memory address for the sequence data. Once the location in memory or the look-up table is provided or obtained, the system begins outputting the data items of the sequence. This occurs at step 1314. The operation then progresses to a step 1318 where the system queries to determine if there are additional data items